CLAIMS

1. Thread cutting insert (10) including a laterally projecting tooth (30, 40) comprising a front, chip cutting and repelling face (31A, 41A), delimited by a cutting edge (31A, 41A) separating it from a flank area (33, 31F, 43, 41F) with a profile (33, 43) having a determined overall relief angle (D), characterised by the fact that the tooth comprises, rearwards of a forward volume part (30A, 40A) directly supporting the cutting edge (31A, 41A) and limited by the flank area (33, 31F, 43, 41F) extending over a limited thickness (h1), a part (30B, 40B) for bracing the forward volume part (30A, 40A), having a profile (36, 45, 46) with an average relief angle (E, F) differing from the overall relief angle (D) of the profile (33, 43) of the flank area (33, 31F, 43, 41F).

2. Insert according to claim 1, in which the profile of the bracing part (30B, 40B) corresponds to a determined geometrical curve (36) that connects directly to a back end (34) of the profile (33) of the flank area (33, 31F).

3. Insert according to claim 1, in which the profile (45, 46) of the bracing part (40B) connects, at a back end (44) of the profile (43) of the flank area (40, 41F), by a section of curve (45) with a relief angle with a set-back, having an average relief angle representing an extreme value, in relation to the remainder of the profile (46) of the bracing part (40B).

4. Insert according to claim 3, in which said remainder of the profile (46) of the bracing part (40B) has an average relief angle (E) that is smaller than the overall relief angle of the flank area (43).

5. Insert according to claim 3, in which the section of curve (45) with a relief angle with a set-back has a set-back with a lateral extension of between 1 and 50% of a lateral height value of the tooth (40).

6. Insert according to one of claims 1 to 5, in which the profile (33, 43) of the flank area (33, 31F, 43, 41F) is curvilinear.

7. Insert according to one of claims 1 to 6, in which the forward volume part (30A, 40A) has a thickness (h1) of between 10 and 50% of a thickness value of the insert.

8. Insert according to one of claims 1 to 7, in which the flank area (33,

31F, 43, 41F) having different surfaces extending substantially in respective planes inclined at different bevel angles (B) in relation to a direction of penetration perpendicular to a surface of the work-piece, the relief angle (D) of the flank area (33, 33F, 43, 43F) follows an increasing law as a function of the bevel angle (B).

9. Insert according to claim 8, in which the law of growth substantially represents the sine of the bevel angle (B).

10. Insert according to claim 8, in which the law comprises a minimum threshold constant.

11. Insert according to any one of claims 1 to 10, in which the profile (36, 45, 46) of the bracing part (30B, 40B) corresponds, according to a determined law of resistance to rearward bending due to cutting, to a smooth curve of moment of inertia as to bending (I), as a function of a current height position (X) in the tooth (30, 40), with the smooth curve having breaks of slope limited to an upper threshold value.

12. Insert according to claim 11, in which the bracing part (30B, 40B) is connected, at a back end (44) of the profile (43) of the flank area (40, 41F), by a section of curve with a relief angle and with a set-back (45), having an S-shaped profile, with ends substantially aligned with said back end (44) and the rest of the profile (46) of the bracing part (30B, 40B), respectively.

13. Insert according to claim 11, in which the tooth (30, 40) laterally presents a bevel angle (B) having a determined widening starting from a beak tip edge (32), and the bracing part (30B, 40B) of the tooth (30, 40) comprises two flanks (40BF) with a relief angle (F1) that is variable according to a law of growth varying in the same direction as said widening, and designed to smooth said curve, of moment of inertia (I), by, at least partial, compensation for said widening.

14. Insert according to claim 13, in which the forward volume part (30A, 40A) of the tooth (30, 40) has a thickness that is variable according to a smoothing law designed to compensate, at least partially, for variations in the moment of inertia (I) due to said widening and to the variable relief angle (F1) of the two flanks (40BF) of the bracing part (30B, 40B).

15. Insert according to one of claims 1 to 14, in which the bracing part (30B, 40B) stands back laterally, in relation to the forward volume part (30A, 40B), corresponding to an average relief angle which is greater than the overall relief angle (D) of the flank area (33, 31F, 43, 41F).

16. Insert according to one of claims 1 to 15, in which the bracing part (30B, 40B) has an average relief angle (E, F) that is less than the overall relief angle (D) of the flank area (33, 31F, 43, 41F).

17. Insert according to claim 16, in which the average relief angle (E, F) of the bracing part (30B, 40B) is negative so that the bracing part (30B, 40B) forms a spur (37, 47), designed to substantially mate with the curvature of a piece having a cylindrical outer surface on which a positive thread is be cut, with the spur (37, 47) extending laterally, towards the piece for positive thread cutting, further than a point of junction (34, 44) between the flank area (33, 31F, 43, 41F) of the forward part (30A, 40A) and a corresponding flank area having said profile (36, 45, 46) of the bracing part (30B, 40B).

18. Insert according to claim 17, in which the spur (37, 47) extends laterally, towards the piece for positive thread cutting, further than the cutting edge (31A, 32, 41A, 42).